NOAA Testbeds and Proving Grounds: 4th Annual Workshop, April 2013

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Outline

- Background
- Research to Operations (R2O/O2R) Framework
- Testbed and Proving Ground (TBPG) Coordination
- FY 13 activities

Background

NOAA has operated testbeds (TB) and operations and services proving grounds (PG) for decades, but in annual TB/PG workshops recognized the need for a systematic approach for their function, mode of operation, and reporting results

Brief working definitions of TB/PG:

- TB-- for developmental testing
- PG-- for pre-deployment (experimental) testing of advanced operations, services and science and technology capabilities

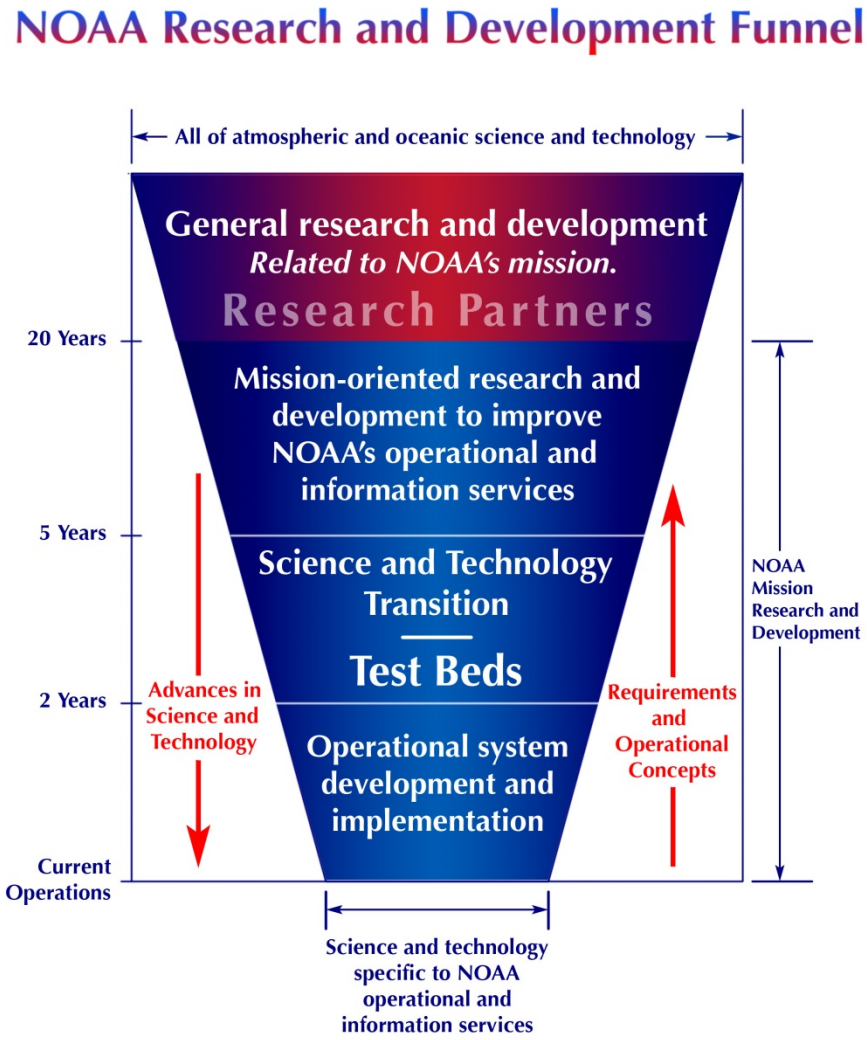
NWS Line Office Transition Manager (LOTM) requested an ad hoc group of NWS and OAR representatives develop guidelines for TB/PG, on:

- Roles and responsibilities of TBPG
- Function and execution
- Governance

March 2011- NOAA LOTMs approved systematic guidelines and chartered a Coordinating Committee for TB/PG

Science Advisory Board (SAB) Concept of R2O

Research structure should enhance the transfer of advances in science and technology into NOAA's operational and information services.



Guidelines

NOAA LOTMs approved the guidelines prepared by an ad hoc committee:

NWS: Paula Davidson (chair), Jason Tuell, Louis Uccellini

OAR: John Gaynor, Steve Koch, Roger Pierce, Marty Ralph

- Policy Context:
  - NOAA and NWS Strategic Plans, NOAA Research Plans, S&T and Services Roadmaps, NOAA research/laboratory reviews, NOAA science review policy
  - Complement activities in existing transition processes
- Roles and responsibilities; Function and execution
  - Incorporate best practices from current TB/PG charters and terms of reference
- Governance:
  - Promote consistency, but not uniformity, among testbeds and proving grounds
  - Involve appropriate stakeholders
  - Propose formal coordination among /across facilities

Coordinating Committee

Responsibilities

- Facilitates communication coordination and consistency among TB/PG
- Assists in programmatic evolution of TB/PGs
- Reports overall progress, success, issues to Line Office Transition Managers
- Links to NOAA budget planning and execution processes to ensure TB/PG are included; advocates for resources
- Educates/advocates on TB/PG within and external to NOAA

Membership

- Each NOAA TB/PG manager (or designee) that meets NOAA TBPG Guidelines
- Line Office focal points for TB/PG, appointed by AAs or LOTMs

Framework for R2O/O2R:
Phased Ingegration into NWS Operations

	Phase	Key Q	Key Metric	Facility
	R&D	**Does it work?**	**Peer-reviewed Publication**	**Universities, Government Labs, Private Industry**
TB →	**Developmental Testing**	**Works with operational systems?**	**Feasibility/ Engineering Analysis Successful**	**Testbed with operations-like environment**
PG →	**Experimental Testing**	**Meets operational performance criteria?**	**Go/No Go based on: Objective Performance (e.g. accuracy) Subjective Feedback Production Readiness**	**Operational proving ground for clinical tests and full "dress rehearsal"**
	Operations	**Maintains required performance?**	**Objective criteria: accuracy and reliability**	**Operations**

Early Steps: Coordinating Committee

- Comprised of TB/PG managers and LOTM-designated LO focal points:
  - Co-chairs: Paula Davidson (NWS LO focal point) and Kevin Kelleher (OAR LO focal point)
- Initial meeting (NWS and OAR members): Seattle AMS, Jan 2011
- Activities:
  - Quarterly virtual meetings featuring TB/PG presentations on recent tests/results
  - Coordination/Outreach: coordinated FY12-FY18 SEE inputs, expanding TB/PG Coordination website; one-on-one tutorials on guidelines; inreach across NOAA
  - Web-site portal revamped (thanks to Rich Lataitis & Barb deLuisi) www.testbeds.noaa.gov
  - Organized 3rd NOAA workshop on testbeds/proving grounds, Spring 2012
  - Adopted recommended approach to metrics for recognizing progress:
    - relevance, quality, and effectiveness/efficiency; tracking in FY13

NOAA Testbeds & Proving Grounds Portal

www.testbeds.noaa.gov

Thanks to:

Rich Lataitis & Barb Deluisi

Spring 2012 Workshop

- 3rd in series; first to highlight opportunities for “integrated testing” in NOAA TB/PG
- Overviews from current/emerging TB/PG
- Integrating Science Theme: Intense Precipitation Events
- Best paper competition; awarded to Faye Barthold (NCEP)
  - Criteria - excellence, relevance, presentation
- Additional highlights:
  - Related prototyping activities: e.g. SPoRT, C-STAR, NWS Roadmap Pilots
- Discussion
  - Keys to increasing the effectiveness of NOAA transitions

FY 2013 Activities

- Piloting Performance measures
- "Operations and Services Proving Ground" inaugural testing
- Planned Website updates to increase external engagement
  - Consolidated Announcements of Opportunity
  - Facility Testing Themes aligned with NOAA's mission goals/ objectives
- Spring Workshop: College Park, MD
  - Updates: NOAA TBPG and Related Testing
  - Science Theme: High-impact environmental events
  - Discussion: Bolstering Impact of NOAA TBPG

Backup

Current NOAA TB/PG

- Testbeds
  - Aviation Weather Testbed (AWT)
  - Climate Testbed (CTB)
  - Coastal & Ocean Modeling Testbed (COMT)
  - Developmental Testbed Center (DTC)
  - Hazardous Weather Testbed (HWT)
  - Hydrometeorological Testbed (HMT)
  - Joint Center for Satellite Data Assimilation (JCSDA)
  - Joint Hurricane Testbed (JHT)
  - Space Weather Prediction Testbed (SWPT)
- Proving Grounds
  - Goes-R Proving Ground (GRPG)
  - Operations and Service Proving Ground (OPG)

http://www.testbeds.noaa.gov

Performance Reporting

- Outcome of Spring 2012 Workshop: TB/PG should take more credit for progress
- Development:
  - Working group developed whitepaper on TB/PG Performance Measures (based on NOAA guidance documents, 5/12- 8/12)
  - Performance Measures adopted by TBPGCC, 9/12
  - LOTMs (TBPGCC Oversight body) approved on 10/12
- Recommendations:
  - Each facility should tailor performance measures from generalized language, in areas of relevance, quality, effectiveness/efficiency
  - Guidance for annual TBPG reports includes documenting testing activities, summary results, performance metrics

Guidelines: Roles and Responsibilities

NOAA participants

Host facilities:

- Develop and maintain Charter and/or Terms of Reference (see governance)
- Establish and lead management team, to oversee, support and facilitate testing operations (see function/execution)
- Lead management team, establish executive oversight committee
- Participate in NOAA-wide coordinating TB/PG coordinating committee

Research partners (outside host facility):

- Participate in peer-review and provide testing support

Operations partners (outside host facility):

- Provide statement of needs/requirements and testing support

External participants

- Respond to announcements of opportunities for testing advanced S&T to support NOAA's operational mission requirements
- Participate in testing and evaluation

Guidelines: Testbed Functions

Testbeds/testbed personnel, under local testbed management:

- Conduct controlled testing of peer-reviewed capabilities to determine if they can work with operational systems
- Provide announcements of opportunity for testing
- Prioritize tests through peer review recommendations, subject to oversight
- Assist/facilitate testing
- Report plans and results at least annually (Management Team)

Guidelines: Proving Ground Functions

Proving grounds personnel/local management function similarly to testbeds

- Conduct controlled real-time testing of capabilities proven to work with operational systems
  - Assess workflow, workload options and impacts; including collaborative operations
  - Determine operational readiness
- Provide announcements of opportunity that identify additional criteria for Proving Ground consideration: e.g. having passed testbed/developmental testing, and demonstrated impact on meeting operational requirements
- Prioritize testing
- Assist/facilitate testing and participate in review/approval processes for implementing into operations
- Report plans and results at least annually (management)

Guidelines: Governance

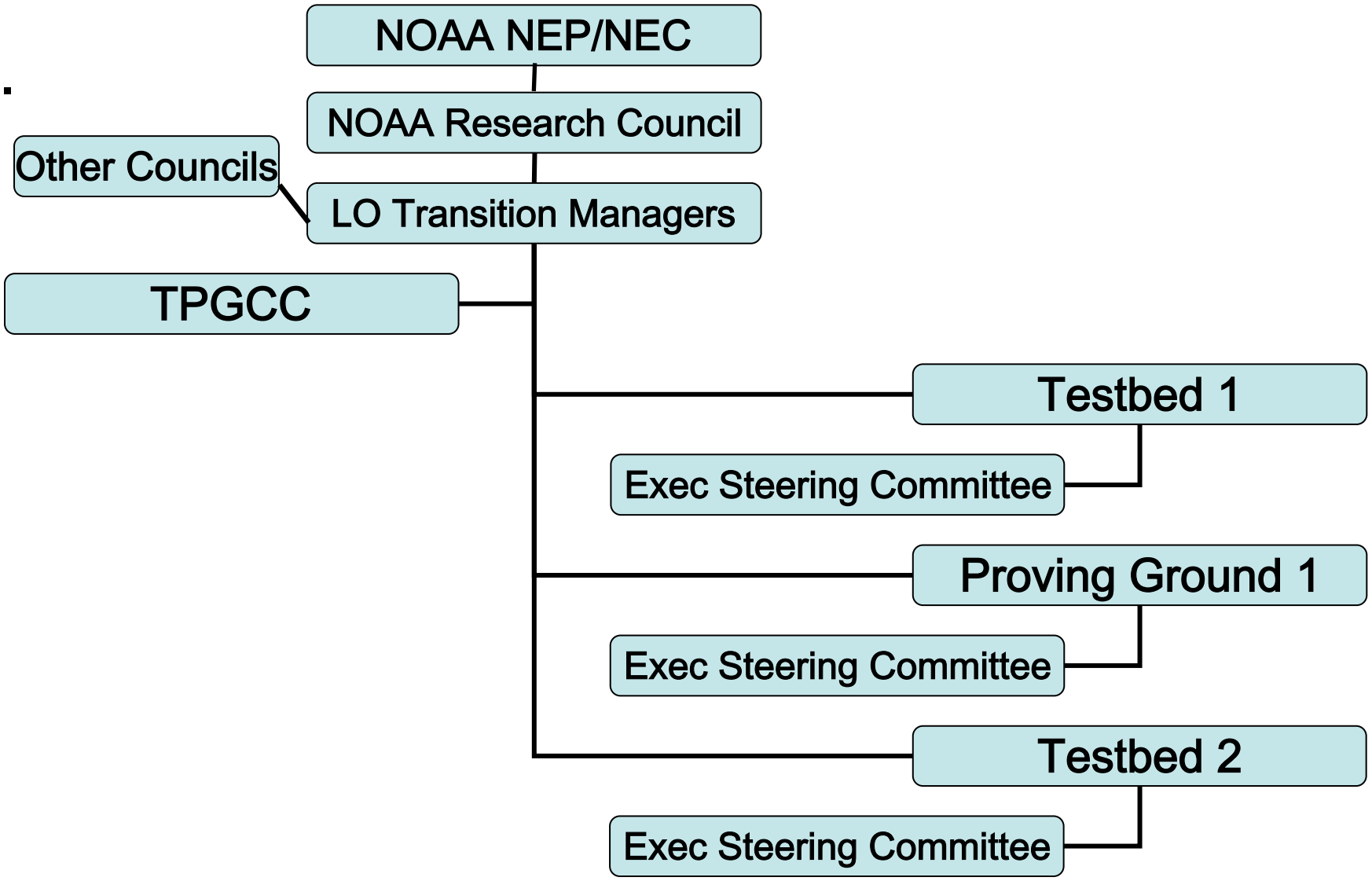
Major aspects

- Local management teams: conduct/support testing operations, report results
- Executive committees/boards: apply strategic and funding considerations in oversight/review of activities, selection of tests, and quality of results
- Coordinating Committee of TB/PG managers and LO focal points: facilitate communication and to provide coordination and consistency among TB/PG

Charters/Terms of Reference: Each TB/PG should develop and maintain

- Outlines scope, operations, and governance, including general procedures, infrastructure requirements and availability of staff and other testing support
- Authority for charters should be the executive oversight committee, or its designee

Governance


NOAA NEP/NEC
NOAA Research Council
Other Councils
LO Transition Managers
TPGCC
Testbed 1
Exec Steering Committee
Proving Ground 1
Exec Steering Committee
Testbed 2
Exec Steering Committee

Working Definitions: Testbed

Testbed:

- A working relationship for developmental testing, in a quasi-operational framework among researchers and operational scientists/experts (such as measurement specialists, forecasters, IT specialists) including partners in academia, the private sector and government agencies, aimed at solving operational problems or enhancing operations, in the context of user needs.
- A successful testbed involves physical assets as well as substantial commitments and partnerships.

What is tested?

- Advances to be considered include peer-reviewed candidates for more effective observing systems, better use of data in forecasts, improved forecast models, and applications for improved services and information with demonstrated economic/public safety benefits.

Working Definitions: Proving Ground

Operations and Services Proving Ground:

- A framework for NOAA/NWS to conduct testing of advanced operations, services and science and technology capabilities that address the needs of both internal and external users. Successful testing demonstrates readiness to implement into operations.

What is tested?

- Capabilities that have already passed developmental testing. Such capabilities include advanced observing systems, better use of data in forecasts, improved forecast models, and applications for improved services and information with demonstrated economic/ public safety benefits.